

NIDIS California-Nevada Drought Early Warning System (CA-NV DEWS) Steering Committee



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The National Integrated Drought Information System (NIDIS)

Goals:

- Provide a better understanding of how and why droughts affect society, the economy and the environment.
- Improve accessibility, dissemination and use of early warning information for drought risk management.



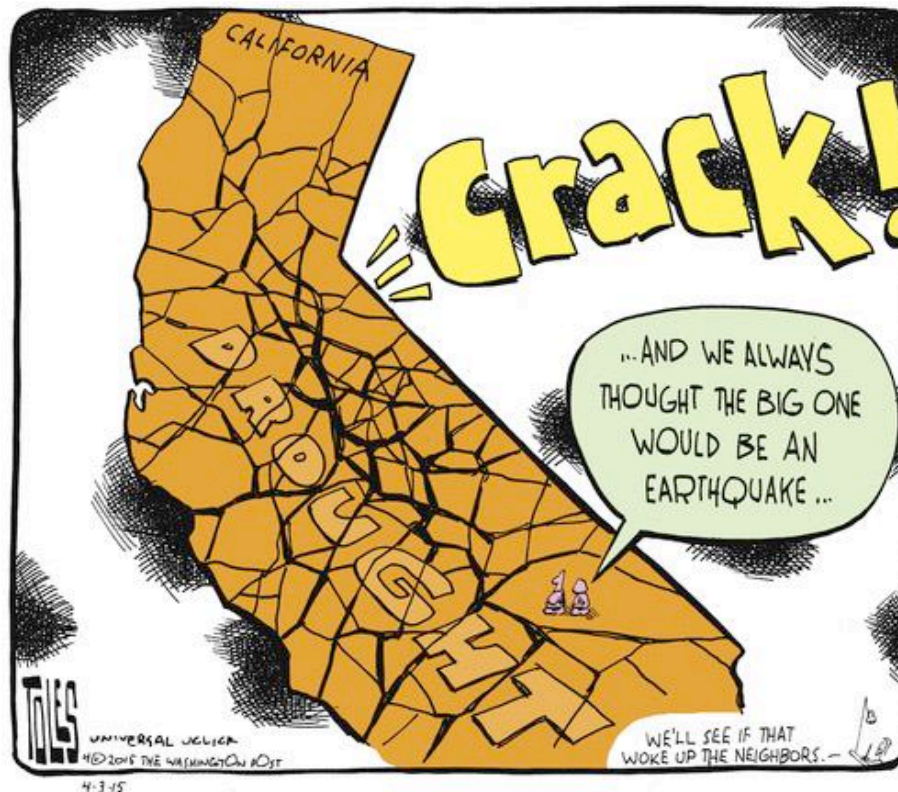
How?

Build off of a network of Regional Drought Early Warning Systems (DEWS) to create a National Drought Early Warning System.



What *really* is Drought Early Warning?

Provision of timely and effective information, through identified institutions, that allows individuals exposed to a hazard to take action to avoid or reduce their risk and prepare for effective response¹

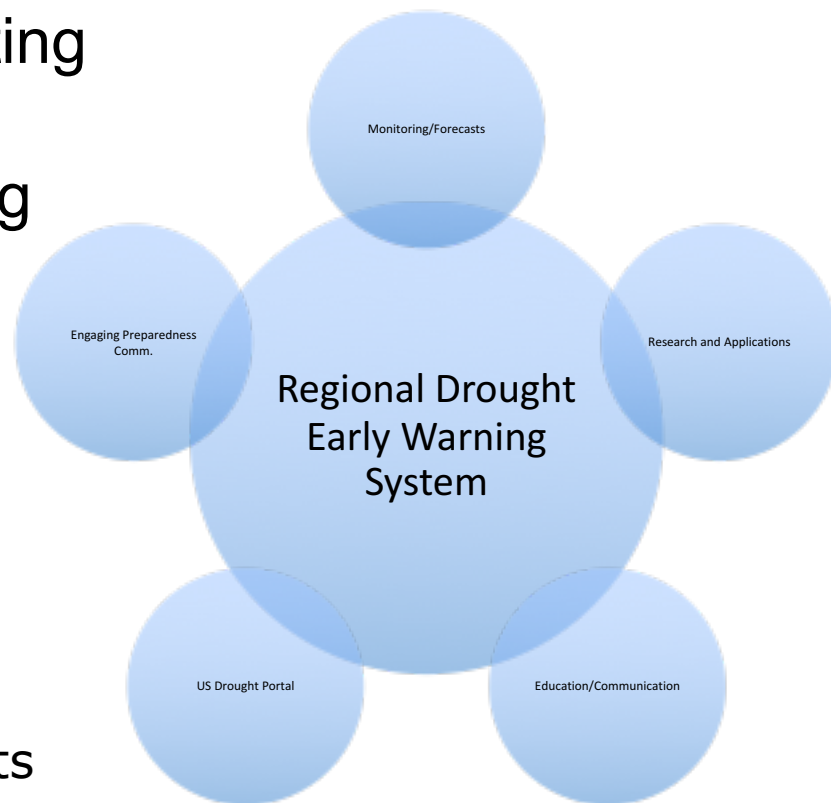


¹International Strategy for Disaster Reduction

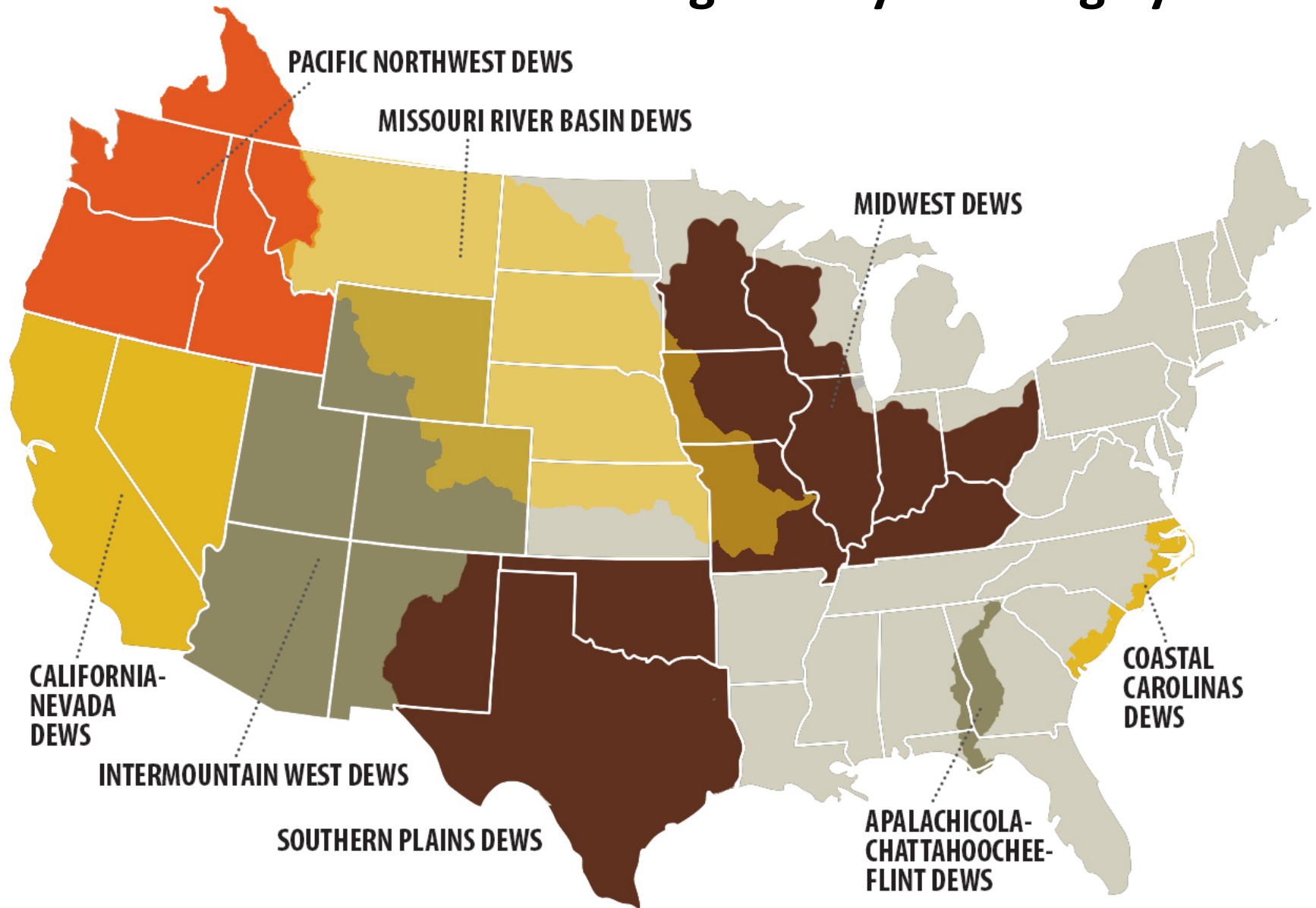
Regional Drought Early Warning Systems (DEWS)

Working with communities and existing networks to build capacity for better decision making for drought planning and mitigation.

- ❑ Drought assessments
- ❑ Climate outlook forums
- ❑ Education and outreach webinars – risk management
- ❑ Engaging the preparedness community
- ❑ Builds capacity to utilize existing products

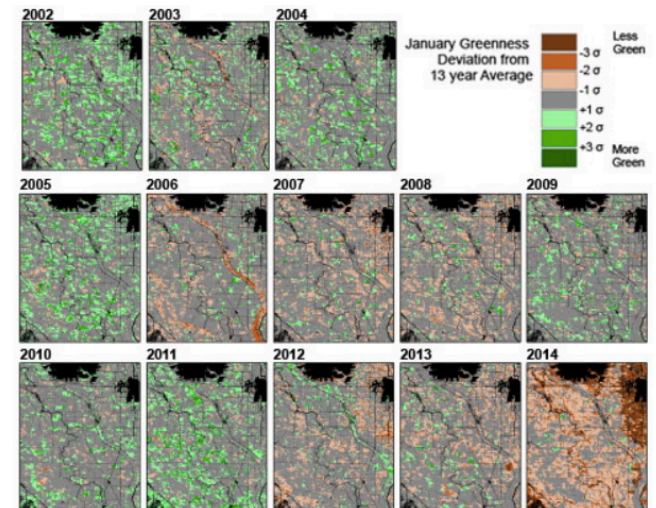


NIDIS Drought Early Warning Systems



Examples of DEWS Activities

- Upper Colorado River Basin – est. 2009
 - Snowpack monitoring workshops in CO, UT and WY
 - Monthly/biweekly webinars
- Apalachicola-Chattahoochee-Flint (ACF) Basin – est. 2009
 - Series of sub-regional/basin workshops
 - Monthly webinar series
- Southern Plains – est. 2011
 - Texas and Oklahoma Inter-agency Climate Extremes Workshop
 - San Antonio Multi-Hazard Tournament

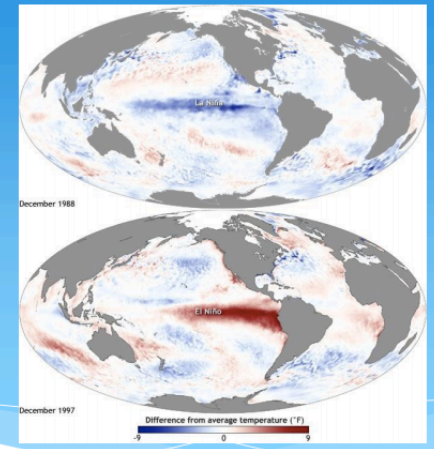


Examples of DEWS Activities

- Coastal Carolinas – est. 2012
 - CoCoRaHS Citizen Science Conditions Monitoring project
 - Coastal Drought Index
- Missouri River Basin – est. 2014
 - Tribal capacity building for drought plans, vulnerability assessment, leveraging federal resources
 - Monthly webinar series
- Pacific Northwest – est. 2016
 - Drought & Climate Outlook Webinar Series
 - PNW Drought Impacts & Triggers Workshop

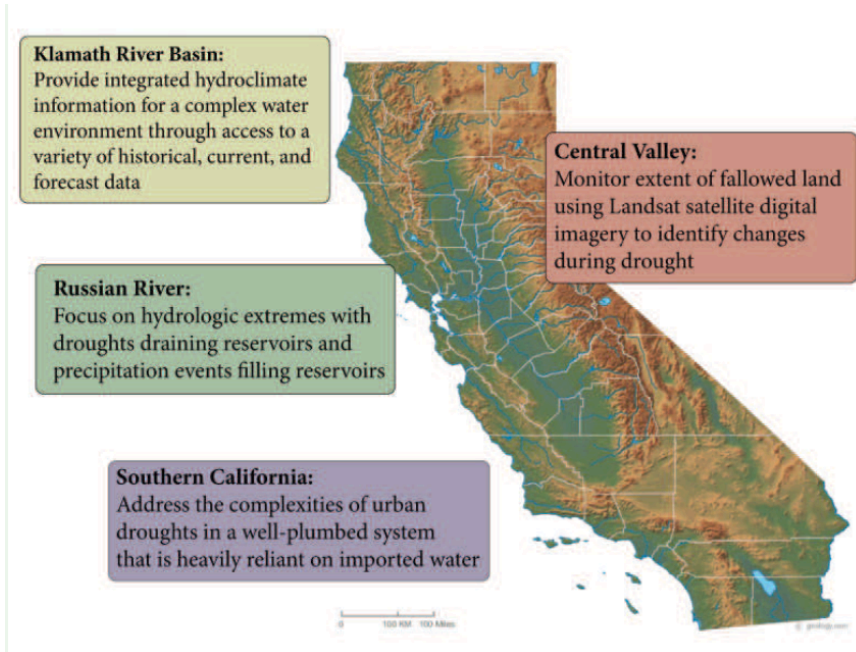
Upper Missouri Basin Climate/Drought Early Warning Webinar: El Niño

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Sea Surface Temperatures – 1988 La Niña and 1998 El Niño

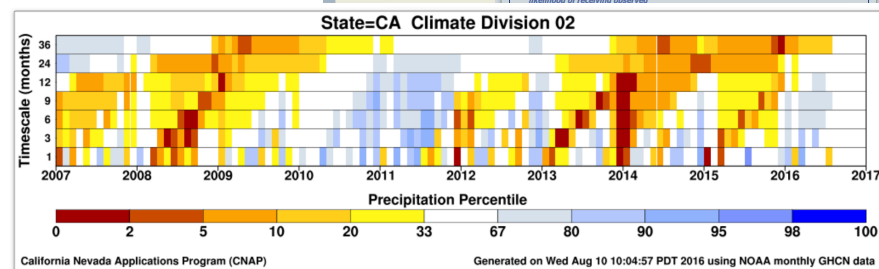
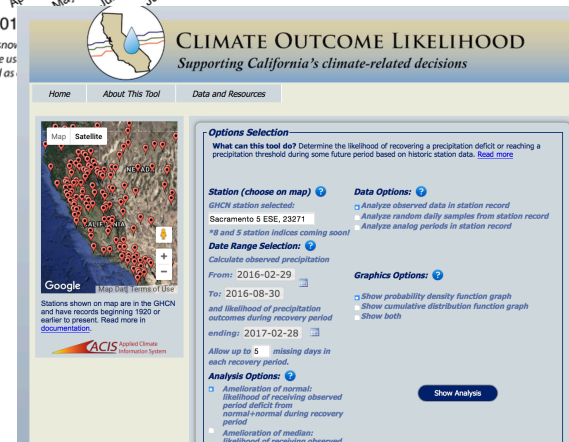
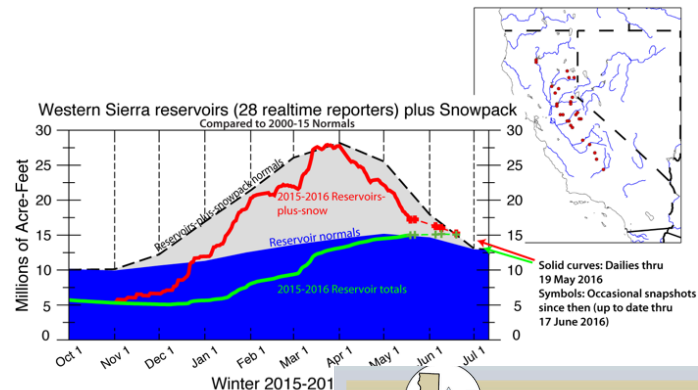
Piloting a California DEWS



- Developed in 2010-2012 with stakeholder and decision maker meetings throughout the state to identify several 'pilot' projects
- 2014
 - California Drought Forum
 - Ranching and California Drought Meeting

Continue Development of Drought Early Warning in CA

- Climate Outcome Likelihood Tool
- Evaluating and understanding seasonal forecast skill using the National Multi-Model Ensemble (NMME)
- Development of a historical catalogue of atmospheric rivers
- Investigation of the impacts of drought combined with higher temperatures on wildfires through analyzing wildfire occurrence, number, size, severity, and pollutant emissions.
- Evaluation of water supplies in California, including water stored in state's snowpack, reservoirs, and to the extent possible, groundwater storage
- Evaluation of historical atmospheric circulation patterns related to major precipitation events and lack thereof to aid forecasts of drought and drought busting
- Working with local agency planners and water utilities to develop 21st century drought scenarios using downscaled climate model projections focused on California
- Near real time ground water pumping in the Central Valley with USGS



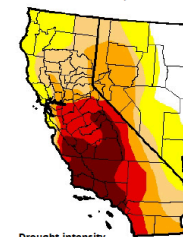
- Winter Status Update Meeting (San Diego) and Webinar, January 2016

2016-2017 Activities

- Drought and Climate Outlook Webinar Series (Aug., Nov., Jan., March)
- Several In-person Drought and Climate Outlooks and Information Gathering Meetings
 - Southern California - Sept 15th, Riverside
 - North Central Coast - Oct 11th, Santa Cruz/Monterey/Salinas
 - Central Valley - Oct 13th, Fresno

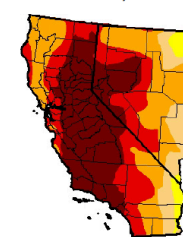


U.S. DROUGHT MONITOR FOR AUGUST 23, 2016



Drought intensity
 D0: Abnormally dry
 D1: Moderate drought
 D2: Severe drought
 D3: Extreme drought

U.S. DROUGHT MONITOR FOR AUGUST 25, 2015



<http://droughtmonitor.unl.edu/>

CURRENT CONDITIONS

While drought conditions in some portions of the region like Northern California and northeast Nevada have improved since the same time last year, much of California and Nevada is still in the midst of a prolonged and record-breaking drought. The central coast and southern regions of California continue to experience high temperatures and dry conditions, which have further exacerbated the wildfire season.

Despite improved precipitation as compared to 2015, the region as a whole continues to experience a large precipitation deficit. June of 2016 brought pockets of much needed precipitation to the Great Basin and Northern California. This in addition to near average snowfall over the winter contributed to improved reservoir levels in Northern California with some reaching above or nearing average storage levels.

In 2015 California's 8 and 5 station indices were both at record low levels, but in 2016 the 8-station index was above and the 5-station was near average. A new 6-station index in the Tulare Basin recorded levels near, but still below average for 2016. While these increased accumulations do not make up for the accumulated precipitation deficit over the last four years of drought they are an important improvement because of the importance of precipitation in the Sierra Nevada on water resources for the state.

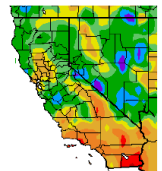
CLIMATE OUTLOOK

As last year's El Niño continues to deteriorate and cooler than normal sea surface temperatures (SST) are observed in the tropical Pacific Ocean, the chances of a La Niña developing are 57%. While the odds of a La Niña developing are greater than normal (by approximately 60%), it is important to note that there is also a 38% chance of a neutral year (neither El Niño or La Niña) (27% higher than normal).

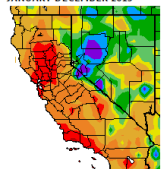
If a La Niña does develop it is expected to be a relatively weak event. Each La Niña is different, but on average they result in 15-20% drier than average conditions in Southern California, modestly drier conditions in Southern Nevada and wetter than average in Northern Nevada. There is not a consistent signal for Northern California where much of the states water resources originate. This means added uncertainty for seasonal forecasts for the region and the associated impacts on water resources for the state as a whole.

The effect of La Niña on winter precipitation is strongest in Southern California where drier than normal conditions tend to develop. If a typical La Niña does develop this region has been one of the slowest to recover from the current drought and a La Niña could

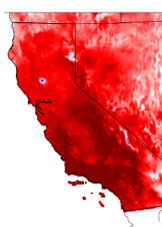
% NORMAL PRECIPITATION JANUARY-JULY 2016



% NORMAL PRECIPITATION JANUARY-DECEMBER 2015



THE MISSING YEARS: PRECIPITATION DEFICITS OVER FOUR WINTERS 2011-12/14-15



EXCESS
 + 2 YEARS
 DEFICIT
 - 2 YEARS
 Expressed in Units of Average Annual Precipitation. Based on PDSM. Courtesy Paul Iniguez, NWS Phoenix.

August 24th Webinar Summary

Strategic Plan

- Roadmap for moving forward with the CA-NV DEWS
- Identify existing and new drought- related activities throughout the region
- Living document w/ 2-yr time frame
- Focus is on activities in the region



Benefits of a DEWS Strategic Plan

- Fostering a regional network
- Collaboration and coordination
- Reference to help generate policy and governmental support
- Resource to assist with leveraging funds
- Foster sharing of activities and info within and across other DEWS

